



DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23681

REPLY TO
ATTENTION OF:

ATCD-SE (70 1f)

25 June 1987

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Joint Service Operational Requirement (JSOR) for
Insect/Arthropod Repellent System

1. HQDA approved the subject JSOR on 5 Jun 87.
2. The following information is applicable to this document:
 - a. System Designation: IPR Program.
 - b. Mission Assignee Agency: U.S. Army Medical Materiel Agency.
 - c. Combat Developer: U.S. Army Health Services Command.
 - d. Trainer: U.S. Army Health Services Command.
 - e. Logistician: U.S. Army Medical Materiel Agency.
 - f. Operational Tester: U.S. Army Health Services Command.
 - g. CARDS Reference Number: 1459.
3. POC is LTC Banks, AV 680-3477.
4. Reference AR 71-9, 20 Feb 87, Materiel Objectives and Requirements.

FOR THE COMMANDER:

Encl

S. D. Serafini
S. D. SERAFINI
LTC, GS

Chief, Publications and Records
Management Division

DISTRIBUTION:
HQDA (DAMO-FDR) (10)
HQDA (DAPE) (2)
HQDA (DALO-SMS/PL)
HQDA (DAMA-PPM) (5)
HQDA (DAMI-TST) (2)
HQDA (DACS-DPA)
HQDA (DAPC-PMO)
HQDA (DASG-HCL) (5)
HQDA (NGB-ARC) (3)
(OVER)

ATCD-SE

25 June 1987

SUBJECT: Joint Service Operational Requirement (JSOR) for
Insect/Arthropod Repellent System

DISTRIBUTION (CONT):

COMMANDANT, MARINE CORPS (RD) (3)

CNO (OP-98/OP-323E) (7)

HQ USAF (RDQX) (3)

COMMANDERS-IN-CHIEF

USAREUR & SEVENTH ARMY (AEAGC-FMD) (25)

USREDCOM (J5E) (2)

COMMANDING GENERAL

MCDEC (D073)

COMMANDER,

EIGHTH US ARMY, ATTN: CJ-FD-MF (2)

FORSCOM, ATTN: AFOP-PM (5)

INSCOM, ATTN: IAFOR-R (2)

OTEA, ATTN: CSTE-POD

USAMMA, ATTN: SGMMA-~~NO~~ RM

MRDC, ATTN: SGRD-UMZ

USARJ, ATTN: AJGC-FDA (2)

USACAA, ATTN: CSCA-RQ

USAISC, ATTN: C-FD

USAISSSC, ATTN: ASR-SD-AM

USALEA, ATTN: DALO-LEI

USA SAFETY CENTER, ATTN: PESC-SE

USA WESTCOM, ATTN: AFOP-PD (3)

TACTICAL AIR COMMAND, ATTN: DRP (2)

USAMC, ATTN: AMCDE-PA (10)/AMCLD-TILO

USA NUC & CML AGENCY (2)

USA CA CEN & FT LEAVENWORTH, ATTN: ATZL-CAM-I (2)

USA LOG CEN, ATTN: ATCL-MS (2)

USA TRAINING SPT CEN, ATTN: ATIC-DST-PM (2)

TCATA, ATTN: ATCAT-OP (2)

USACAC LO (AK)/ATZL-TIE (2)

USAJFKSWC, ATTN: ATSU-CD-MO

USAAVNC, ATTN: ATZQ-D-MS (10)

USAAVSCOM, ATTN: AMCPM-ALSE (5)

CHEMICAL R&D CTR, ATTN: (DRSMC-CLN)

NRDEC, ATTN: STRNC-EML (10)/STRNC-WES (2)

USASSC, ATTN: ATSG-DDC

USA TROSCOM, ATTN: AMXSO-TL

USASSC-NCR, ATTN: ATNC-NMM-A (2)

USA TRAC (WSMR)

(CONT)

ATCD-SE

25 June 1987

SUBJECT: Joint Service Operational Requirement (JSOR) for
Insect/Arthropod Repellent System

DISTRIBUTION (CONT):

COMMANDANT,

USAARMS, ATTN: ATSC-CD (2)

USAFAS, ATTN: ATSF-CD (2)

USAES, ATTN: ATZA-CD (2)

USAQMS, ATTN: ATSM-CE (2)/ATSM-CDM (5)

USAIS, ATTN: ATSH-CD (2)

USATALS, ATTN: ATSP-CD (2)

USAMPS, ATTN: ATZN-MP-CD (2)

USACMLS, ATTN: ATZN-CM-CS2 (2)

USAADAS, ATTN: ATSA-CD (2)

TJAGSA

AHS, ATTN: HSHA-CDM (2)

DIRECTOR,

NATIONAL SECURITY AGENCY

MTMC TEA (MMT-TRG)

DEFENSE MAPPING ACGY, TOPO CEN, ATTN: PRI

USA CD EXPER CEN (2)

LABCOM, ARMY INFO FOR INDUSTRY PROGRAM (AMSLC-TP-TI)

TRADOC LO,

USAREUR

EIGHTH USA

UNITED KINGDOM

TROSCOM

USAF AWS

USMCDEC (D131)

USARDSG-CD

AVSCOM, ATTN: ATFE-LO-AV

CINCUNC-USFK-EA, ATTN: J-3, USATRADOC LO

LO AT TRADOC

USMC

USAF

JOINT SERVICE OPERATIONAL REQUIREMENT (JSOR)
FOR
INSECT/ARTHROPOD REPELLENT SYSTEM

1. TITLE.

- a. Insect/Arthropod Repellent System.
- b. CARDS Reference Number: 1459.

2. NEED/THREAT.

a. Need. A need exists for an insect/arthropod repellent system that will counter the effects of arthropod-borne disease. Military history provides numerous campaigns which have been lost or adversely affected because of these diseases. The potential for transmission of naturally occurring insect/arthropod-borne disease to U.S. forces is enormous if appropriate preventive countermeasures are not instituted prior to or upon arrival in endemic areas. In many countries of the world, maladies such as malaria, the hemorrhagic fevers, and sandfly fever are still responsible for serious illnesses involving both rapid short-term and lengthy incapacitation periods and numerous deaths. The presence of biting insects/arthropods (e.g., mosquitoes, biting flies, chiggers, ticks, etc.) can markedly reduce the operational efficiency of soldiers. The result is a reduction of work output in infested areas by more than 25 percent. Repellents are effective against a wide range of insect/arthropod disease vectors, whereas a separate protective drug and/or vaccine must be developed for each disease.

b. Threat. Vector-borne diseases continue to be a very substantial infectious disease threat to our military forces during combat operations, mobilization, and training. Additionally, insects and arthropods are potential carriers of biological warfare agents. To counter this threat and maintain our fighting strength, an insect/arthropod repellent system will provide extended protection for the user from insect and other arthropod vectors of diseases and will directly address the military deficiency of inadequate disease prevention on the battlefield as reflected in Combat Service Support Mission Area Analysis, Part 8, Medical, Page 8-13-11, Deficiency No. 7.

3. INITIAL OPERATIONAL CAPABILITY (IOC). 1QFY89.

4. OPERATIONAL/ORGANIZATIONAL PLAN. The two component repellent system is for individual use by all soldiers entering combat, mobilization, or training areas infested with disease vectors and/or biting insects/arthropods. The soldier will personally apply the topical repellent to exposed skin areas and the clothing impregnant to the Battle Dress Uniform (BDU). The repellent system will be used in all geographic areas and under all battle-field conditions in which weather conditions are conducive for insects/arthropods within the basic climatic design type (except the basic cold daily cycle) (AR 70-38). The repellent system will be used by all types of military organizations and will require the same organizational support as the current system.

5. OPERATIONAL CHARACTERISTICS.

a. The insect/arthropod repellent system will:

(1) Consist of two interoperable components, a topical repellent formulation for application to exposed skin areas and a clothing impregnant for application to the BDU.

(2) Have a feel and smell that are user acceptable by 70 percent or more of the soldiers as determined by consumer acceptance testing during development.

(3) Have no odor detectable by humans at a distance greater than ten feet from the soldier using it.

(4) Provide continuity of operations by providing protection from vectors of disease. (See 5b and 5c for protection levels.)

(5) Have a minimum shelf life of two years (five years desirable) and have no special handling requirements, e.g., controlled environment, when stored in climatic conditions hot and basic (AR 70-38). Be operational in all warfare environments and geographic areas and during weather conditions that are conducive to insect/arthropod bites.

(6) Be packaged for transportability in military land, sea, and air vehicles.

(7) The repellent system is not mission essential on the nuclear battlefield and does not need to be nuclear survivable. Packaging for the repellent system must be capable of withstanding decontamination for nuclear, biological, and chemical (NBC) contaminants.

(8) Be standardized with DOD services and agencies through the Armed Forces Pest Management Board (AFPMB).

(9) Be compatible with other military systems and be at least 50-75 percent less plasticizing than current repellents.

(10) No preplanned product improvements are programmed for this item.

(11) Topical repellent will be compatible with camouflage face paints. Clothing impregnant will not increase the infrared detection characteristics of the BDU. Both component packages will be camouflaged.

(12) Components of the system will be packaged separately in durable containers of convenient size and weight that easily can be carried, stored, and used by the soldier. The topical repellent formulation will weigh approximately two ounces and the clothing impregnant will weigh approximately four ounces.

b. The topical repellent will reliably and effectively repel disease-carrying and nuisance insects/arthropods for approximately 12 hours at the 95-100 percent level in the basic climatic design type including adverse weather, except the basic cold daily cycle (AR 70-38).

c. The clothing impregnant, when applied to the BDU, will reliably and effectively prevent insect/arthropod bites to the user at the 95-100 percent level on areas covered by the treated BDU for 30 days or longer in the basic climatic design type, including adverse weather (AR 70-38).

d. The following items have been considered and do not apply to the repellent system: security; communications; airdrop certification and jumppack; adverse weather and reduced visibility conditions (smoke and obscurants), and military operations on urbanized terrain; collective protection equipment; and special purpose deception materiel.

6. TECHNICAL ASSESSMENT. The materiel developer, Medical Research and Development Command (MRDC), will conduct laboratory and field tests to ensure that both components of the insect/arthropod repellent system are acceptable to the user population. These considerations will be addressed during appropriate technical testing (TT) and initial operational test and evaluation (IOTE). During technical testing, MRDC will evaluate successive prototypes for effectiveness against medically important and major nuisance insects/arthropods, evaluate each of the two components of the system for toxicity, evaluate the effects of the system on representative military materials, determine the duration of protection of the system and its components under the basic climatic design type (except basic cold daily cycle) using standard test methods, evaluate the

topical repellent for soldier acceptance, evaluate chemical warfare agent (CW) analogs and topical repellent formulation and BDU fabric treated with repellent impregnant for interaction in penetration of skin, and evaluate interaction/compatibility of topical repellent with standard CW agent decontaminant/detoxinant agents.

7. SYSTEM SUPPORT ASSESSMENT. The system support plan will be used to determine and define all logistics support issues for the operation, maintenance, and support of the system. The system support package will be available for evaluation during IOTE and validated prior to IOC. Logistical support requirements for the new system are expected to be similar to the system being replaced.

8. MANPRINT ASSESSMENT.

a. Manpower/Force Structure Assessment. No new manpower or force structure will be required to support or maintain the insect/arthropod repellent system.

b. Personnel Assessment. No increase in support personnel or soldier aptitudes will be required to field the repellent system. No new Military Occupational Specialty (MOS) or increase in existing MOS workload will be required. Available military manhours will be increased due to a reduction of diseases resulting from arthropod exposure.

c. Training Assessment. The training developer, Academy of Health Sciences (AHS), and MRDC will develop the training support plan to support the repellent system. The MRDC, with AHS, will develop the training subsystem designed to support all phases of training. Training materials required to support system training will be developed by MRDC. Technical manuals and extension training material for the system will be developed by MRDC in New Look format IAW AR 310-3 and will be evaluated for adequacy by AHS IAW Chapter 8, AR 310-3. Training devices will not be required. The AHS will develop, or ensure development of, any training products, or changes to existing ones, required for the repellent system IAW TRADOC Reg 351-9. Training products developed as part of the training subsystem will be designed according to the Systems Approach to Training (TRADOC Reg 350-7) using the data generated IAW MILSTD-1388 1a and 2a. The Training Support Plan will be available for evaluation during IOTE.

d. Human Factors Engineering. The MRDC will conduct troop acceptance evaluations in coordination with AHS. MILSTD-1472, Human Engineering Design Criteria for Military Systems, Equipment and Facilities, applies.

e. System Safety. The repellent system will meet the regulatory requirements, e.g., efficacy, safety, and quality control, of the Environmental Protection Agency for registration under the Federal Insecticide, Fungicide, and Rodenticide Act. MILSTD-882A, System Safety Program Requirements, applies.

f. Health Hazard Assessment (HHA). An HHA will be conducted IAW AR 40-10.

9. STANDARDIZATION AND INTEROPERABILITY. The AFPMB (DODD 6050.10) will standardize the repellent system DOD-wide. Medical representatives from the armed forces of Australia, Canada, the United Kingdom, and Israel have expressed interest in the repellent system; and it is anticipated that other Allied nations also will be interested.

10. LIFE CYCLE COST ASSESSMENT. See Annex A.

11. MILESTONE SCHEDULE.

a. JSOR Approval	1QFY87
b. TT-2	1QFY87
c. Milestone Decision Review (MDR) I In-Process Review (IPR)	2QFY87
d. IOTE-1	4QFY87
e. MDR II/III IPR	1QFY88
f. IOC	1QFY89